partment of Genetics, Faculdade de Medicina, October 1973, Dr. Velthuis (coll.), sent by H. Shimanuki of the Bee Laboratory, USDA, Beltsville, Maryland.

Remarks.—This mite is named for Dr. Jean Gaud, Laboratoire de Parasitologie, Faculté de Médicine, 35000-Rennes, France.

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A New Species of Coccipolipus *Parasitic on the Mexican Bean Beetle (Acarina: Podapolipidae)*

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ABSTRACT

Coccipolipus epilachnae n. sp. is described and illustrated. Observations on the biology of the mite are discussed. The mite causes reduction in egg production of the Mexican bean beetle, *Epilachna varivestris* Mulsant.

I am describing a new species of *Coccipolipus* that was associated with the Mexican bean beetle, *Epilachna varivestris* Mulsant (Coccinellidae). Husband (1972) erected the genus *Coccipolipus* for *C. macfarlanei* Husband, which was found associated with the coccinellid *Cycloneda sanguinea* (L.). Feldman-Muhsam and Havivi (1972) described *Podapolipus (Bakerpolipus) coccinellae*, which was collected from the underside of the elytra of *C. sanguinea* together with the fungus *Hesperomyces*. They did not report adverse affects caused by the mite or fungus.

Coccipolipus epilachnae, new species
(Figs. 1–5)

According to Husband's (1972) key to species of *Coccipolipus* (which contains 4 species), *C. epilachnae* is more closely related to *C. macfarlanei* Husband than the other species of the genus. *C. epilachnae* can be separated from *C. macfarlanei* by the adult female having 2 pairs of legs; the male having a lateral spur on tibia I; and by the larviform female having 3 pairs of setae on the propodosoma. *C. macfarlanei* adult female has 1 pair of legs; the male has a spine on tibia I; and the larviform female has 2 pairs of setae on the propodosoma.

Female (Fig. 1): Gnathosoma wider than long, strongly sclerotized. Palpi reduced, without apparent setae on basal segments. Chelicerae not visible.

Idiosoma.—Eggshaped, smooth; without setae, and yellowish in alcohol; 5 subequal anterolateral lobes; dorsoventrally flat.

Legs.—Two pairs; 1st pair with 5 segments;

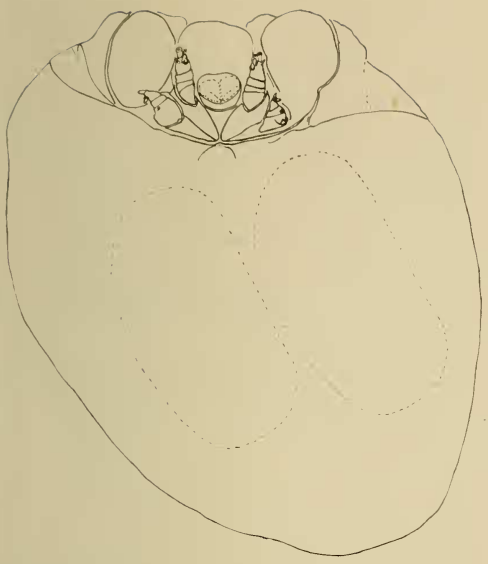


Fig. 1.—*Coccipolipus epilachnae*, new species, venter of female.

as figured; distal segment terminated with dark sclerotized hook-shaped claw, 1 dorsolateral short spur, and 1 fingerlike process. Second pair reduced in length; femur with short anterolateral, simple seta; distal segment terminated with 2 strong, short spurs. Body 517 μ long by 440 μ wide.

Larviform Female (Fig. 2, 3): Gnathosoma spherical, wider than long. Cheliceral cone protruding. Chelicerae thin, hooked shaped; with wide base and short stylets, ending without apparent teeth. Palpi 2-segmented; distal segment with 1 ventral simple seta and 1 anterolateral short spur. One pair of long lateral simple setae; ventrally and adjacent to this pair of setae, a smaller pair of simple setae.

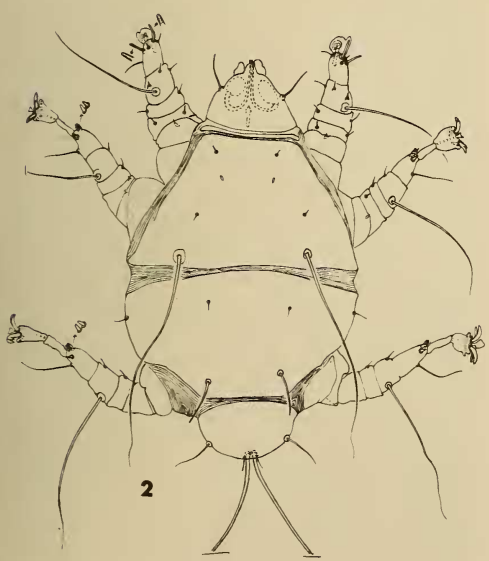
Dorsum.—Propodosomal shield rectangular shaped, wider than long; with 2 pairs of short subequal simple setae; 1 pair of pores; posterior pair of simple setae longer and stronger. Hysterosomal shield elongated; with 3 pairs of setae; humeral setae longer than anterior or posterior pair; posterior pair longer and stronger than anterior pair. Opisthosoma oval, with 1 pair of simple setae.

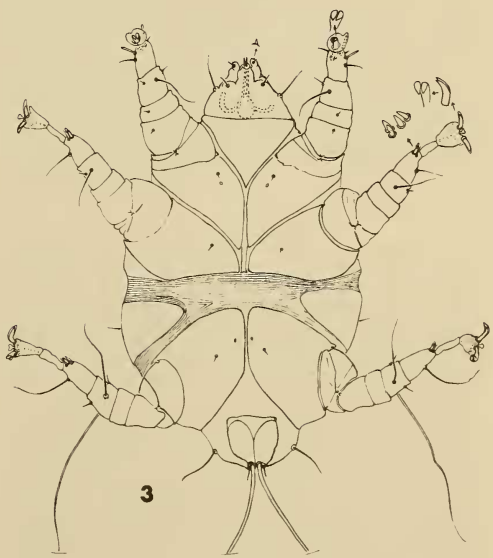
Venter.—Coxal plates I and II fused mesially, separated from plate III by fine striae. Each coxal plate with 1 seta; plate I and III each with small pore. One distinct plate on each side of body between legs II and III. Caudal plates well developed; with a pair of accessory setae, one on each side of caudal setae as figured.

Legs.—Short and robust. Chaetotaxy on femur, genu, tibia and tarsus I: 2 + 1 spine−3−5+1 spine−2+1 spur+2 solenidia+1 bifurcate claw; leg II: 1 spur−1 spine−4−2+3 spurs+2 bifurcate claws; leg III: 0−1−4−2+3 spurs+2 bifurcate claws. Body 217 μ long by 127 μ wide.

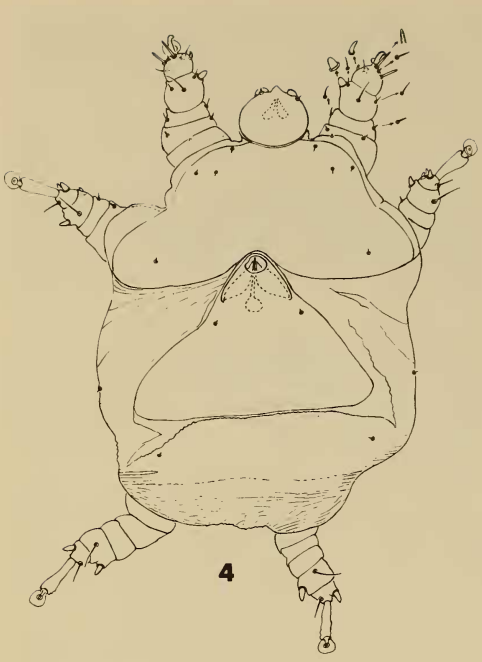
Male (Fig. 4, 5): Gnathosoma oval, wider than long. Cheliceral cone protruding. Chelicerae thick, wide at base; with short stylets, ending without apparent teeth or barbs. Palpi 3-segmented; distal segment with 1 microseta and 1 short spine; second segment without apparent setae; proximal segment with 2 microsetae; 1 pair of strong, short spurs adjacent to proximal segment; dorsal anterolateral margin with 1 pair short spurs, each spur located above palp as figured.

Dorsum.—Propodosomal shield elongated; with 4 pairs of microsetae as figured. Hysterosomal





Figs. 2, 3.—*Coccipolipus epilachnae*, new species, larviform female. 2, dorsum; 3, venter.



Figs. 4, 5.—*Coccipolipus epilachnae*, new species, male. 4, dorsum; 5, venter.

shield triangular; with 1 pair of microsetae; with aedeagus situated middorsally, the orifice at the apex of shield; with 1 pair of microsetae subequal in length in region of the metapodosoma.

Venter.—Pair coxal plates I and II fused mesially, coxal plates I and II each with 1 microseta; each coxal plate I with a pore. Coxal plates III without apparent pore, but with 1 pair of microsetae; metapodosoma separated from coxal plates II by fine striae. Caudal plates poorly developed.

Legs.—Short and robust. Chaetotaxy on femur, genu, tibia and tarsus I: 2+1 spur−2−4+1 thick thumb-like spur−2 solenidia+1 simple spur+1 thumb-like spur+3+1 uncinated claw; leg II: 1−1−2+2 spurs−1+3 spurs, claws absent; leg III: 0−1−2+2 spurs−1+3 spurs, claw absent. Body 159 μ long by 121 μ wide.

Holotype: Male, U. S. National Museum of Natural History No. 3620, collected from *Epilachna varivestis* Mulsant, originally found in San Salvador, El Salvador, 8 Dec. 1972, by Dr. F. F. Smith.

Paratypes: 3 females, 6 males and 32 larviform females with the above data.

Discussion: The preceding new mite species was made available for taxonomic study through the courtesy of Dr. Floyd F. Smith, Collaborator, Ornamentals Laboratory, ARS, USDA, Beltsville, Maryland. While on duty tour as Consulting Entomologist with the AID program in El Salvador, C.A., about 15 adult Mexican bean beetles, *Epilachna varivestis* Mulsant, were collected on 7 November 1971 from pole beans, taken from variety test plots at the National Agriculture Experiment Station at San Andres, El Salvador. By prearrangement, Dr. Roger Lawson was provided with a special permit, and he brought these beetles to the Beltsville Agricultural Research Center. They were delivered to Dr. W. W. Cantelo for conducting cross-mating studies with the local Mexican bean beetles. The El Salvador beetles in the colony were sluggish, fed little and laid few egg clusters. When the males were mated with virgin Beltsville females, the eggs produced were sterile, but Beltsville males mated with the virgin Salvador females resulted in the production of fertile eggs. These progeny were mated with El Salvador and Beltsville males and females in reciprocal crosses, and egg pro-

duction was normal (W. W. Cantelo, unpublished data).

On 20 July 1972, Dr. Smith and Ing. Jose Mancia, El Salvador Entomologist, collected a second lot of beetles that included adults and larvae from unstaked beans (27-R variety) in fields on the high slopes of the Volcano San Vincente. The beans were maturing and leaves were yellowing. They were scheduled for pulling and harvesting as dry beans in about 2 weeks. The foliage damage was estimated as less than 5%, very low by comparison with the usual damage in the U. S. However, it was the worst damage yet observed in El Salvador. No sprays had been applied for control. Dr. Smith brought samples of these beetles, under permit, to Beltsville on 24 July 1972. This colony was established in a separate cage. Again, adults fed little, rested on sides of the cages, and laid few eggs on the host plants. Fertile eggs were produced from all reciprocal crosses of males and virgin females of the Beltsville and El Salvador colonies. In late October egg production dropped in the colonies for no apparent reason. In November Dr. Boswell, Dr. Cantelo's assistant, observed slightly raised elytra and protruding bodies of small mites on some of the beetles. Upon raising the wing covers of adults of both colonies he found numerous mites closely packed together and apparently feeding on the dorsal surface of the host abdomen. Apparently these parasitic mites were associated with the decline in vigor and reproduction of the colonies. They probably gained access to the Beltsville colony when selecting individuals for cross mating tests with individuals from El Salvador. The colonies were not mixed in a common cage at any time. The mites may have been transferred on the hands or in vials used in handling the insects. A mite-free colony of bean beetles was established by examining a few egg clusters for absence of the mites and by rearing the hatching larvae in a separate green house. This colony with normal reproduction is now being maintained. Dr. Smith had assumed that the infested colonies would be retained for further experimentation to determine the potentialities of this new mite as a means of biological control for the Mexican bean beetle, but he failed to discuss this with anyone. Upon later inquiry he learned that after obtaining hatching larvae from isolated eggs, all other beetles were destroyed and cages thoroughly cleaned.

Although the parasitic mites were not discovered until after the mating tests had been made with beetles from the second collection from the San Vincente area, it is possible that they were present in the earlier collection from San Andres. Fewer cross mating tests were made from this colony, and any transfer of mites to beetles of the Beltsville colony was not evident. Since the beetles' behavior in both collections was similar, apparently, most if not all beetles from El Salvador were infested. All Mexican bean beetles had disappeared during the 1973 dry season, resulting in failure to collect mite-infested beetles for further studies at Beltsville.

Dr. Smith states, "from my 10 years observation in El Salvador during fairly regular periodic tours of duty with AID programs, the Mexican bean beetle was observed to be a minor pest in all bean growing seasons and required no insecticide treatment to protect the crops."

Studies are now being initiated to determine the mite's host range and potential effectiveness as a biological control agent.

Acknowledgments

I wish to thank Dr. Floyd F. Smith, Collaborator, Ornamentals Laboratory, ARS, USDA, Beltsville, Maryland for mite specimens and valuable information included in this manuscript. I also wish to thank Dr. W. W. Cantelo, Vegetable Laboratory, ARS, USDA, Beltsville, Maryland for his suggestions and review of the original manuscript. I am also indebted to Dr. Robert F. W. Schroder,

Beneficial Insect Introduction Laboratory, IIBIII, Beltsville, Maryland who collected additional specimens of the mite species here described from *Epilachna varivestis* and the mite *Coccipolipus macfarlanei* Husband from the coccinellid *Cycloneda sanguinea* (L.) at San Vincente, El Salvador on 17 July 1974.

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Biological Note on the Acridid Grasshopper Stenacris vitreipennis vitreipennis *(Marschall) (Insecta: Orthoptera)*

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ABSTRACT

Stenacris vitreipennis vitreipennis oviposits in the pithy stems of *Sagittaria* sp. in Florida.

All Leptysmini and many other Cyrtacanthacridinae are hygrophilous, frequenting vegetation growing in or about ponds, streams, and lakes, and occurring at times even on grasses and sedges standing in water of considerable depth. Biological information on *Stenacris* is scanty, but *Cornops aquaticum* Bruner, another cyrtacanthacridine, is known to oviposit in the thick soft petioles of the leaves of a water hyacinth, *Eichhornia azurea* (Swartz), a common plant in the streams and rivers of Uruguay (de Zolessi 1956).

Rehn (1952) referred to *Gesonula punctifrons* (Stal) ovipositing in the succulent stems of taro. Rehn and Hebard (unpublished information in Rehn and Eades 1961) noted *Stenacris vitreipennis vitreipennis* on arrowhead, *Sagittaria* sp., at Tallahassee, Florida, but did not record any information on the biology. This species was reared from egg-pods deposited in the pithy stems of *Sagittaria* sp. at a pond 1 mi north of Spring Creek, Wakulla Co., Florida in the summer of 1973. Egg-pods were inserted in the stems of the *Sagittaria*, and recovered from below water level, although they were not necessarily deposited below water level because there were marked fluctuations in water level in the pond both prior to and following the discovery of the oviposition scars and embedded egg-pods.

The hatching of the nymphs in the laboratory corresponded with collection of first-instar nymphs in the field. Subsequent collections resulted in the collection of nymphs and adults in the late spring and summer of 1973, but details of the occurrence of the various instars were not noted. Preserved material of the